IN THE SPECIFICATION

The following paragraphs will replace all prior versions in the specification:

[0002] Multi-Protocol Label Switching (MPLS) is an advanced framework for high-speed data forwarding that differs from conventional destination-based IP routing: each packet is provided with a "label" that is used by label switched routers (LSRs) to forward the packet along what is referred to as a label switched path (LSP). See E. Rosen et al., "Multiprotocol Label Switching Architecture," Internet Engineering Task Force (IETF) Network Working Group, Request for Comments (RFC) 3031, ~~http://www.ietf.org/rfc/rfc3031.txt (January 2001)~~. LSRs inform adjacent nodes of label bindings using a process of label distribution which is known as LSP setup. See, e.g., L. Andersson et al., "LDP Specification," IETF Network Working Group, RFC 3036, ~~http://www.ietf.org/rfc/rfc3036.txt (January 2001)~~. Labels are by convention allocated and distributed from a downstream direction – where "downstream" in the art refers to the direction of data flow. In the context of IP networks, where LSPs are assumed to be unidirectional, downstream label selection convention assures that there is no label contention among connection requests coming from different directions.

[0003] Generalized MPLS ("GMPLS"), also referred to in the art as Multi-Protocol Lambda Switching ("MPL(ambda)S"), extends MPLS to support – not just packet-switching devices – but devices that perform switching in the time, wavelength, and space domains. GMPLS provides the potential for a control plane that can be utilized with legacy equipment (e.g. SONET) as well as newer devices (e.g. optical crossconnects ("OXCs")). See, e.g., D. Awduche et al., "Multi-Protocol Lambda Switching: Combining MPLS Traffic Engineering Control with Optical Crossconnects," IETF Network Working Group, Internet Draft, ~~http://www.ietf.org/internet-drafts/draft-awduche-mpls-te-optical-01.txt (November 1999)~~. For various practical reasons, current GMPLS signaling mechanisms permit the setup of what are referred to in the art as bidirectional LSPs. See P. Ashwood-Smith, et al., "Generalized MPLS – Signaling Functional Description," IETF Network Working Group, Internet Draft, ~~http://www.ietf.org/internet-drafts/draft-ietf-mpls-generalized-signaling-01.txt (November~~

2000). The introduction of bidirectional LSPs creates the practice of upstream label distribution and suggested label distribution. These two label distribution policies presents the possibility of contention between two bidirectional LSP requests traveling in opposite directions between two adjacent nodes. If there is no restriction on the ports/channels that can be used for bi-directional LSPs and if there are alternate resources, then both nodes will pass different labels upstream/downstream and the contention will be resolved naturally. If there is a restriction on the ports/channels that can be used for the bidirectional LSPs (for example if they must be physically coupled on a single I/O card), or if there are no more resources available, then the contention must be resolved by some other means. The current GMPLS signaling proposal suggests letting the node with the higher node ID win the contention.

[0015] A label-switched path ("LSP") through the network is established using the exchange of label distribution messages between adjacent nodes, in accordance with an advantageous protocol such as RSVP-TE or CR-LDP. See, e.g., P. Ashwood-Smith, et al., "Generalized MPLS – Signaling Functional Description," IETF Network Working Group, Internet Draft, http://www.ietf.org/internet-drafts/draft-ietf-mpls-generalized-signaling-01.txt (November 2000); L. Berger, et al., "Generalized MPLS Signaling – RSVP-TE Extensions," IETF Network Working Group, Internet Draft, http://www.ietf.org/interenet-drafts/draft-ietf-mpls-generalized-rsvp-te-00.txt (November 2000); D. Awduche et al., "RSVP-TE: Extensions to RSVP for LSP tunnels," IETF Network Working Group, Internet Draft, http://www.ietf.org/internet-drafts/draft-ietf-mpls-rsvp-lsp-tunnel-06.txt (July 2000); P. Ashwood-Smith, et al., "Generalized MPLS Signaling – CR – LDP Extensions," IETF Network Working Group, Internet Draft, http://www.ietf.org/internet-drafts/draft-ietf-mpls-generalized-cr-ldp-00.txt (November 2000); and B. Jamoussi, et al., "Constraint-Based LSP Setup using LDP," IETF Network Working Group, Internet Draft, http://www.ietf.org/internet-drafts/draft-ietf-mpls-cr-ldp-04.txt (July 2000), which are incorporated by reference herein.